REMARKS

Claims 1-21 were examined in the outstanding non-final office action mailed on 9/26/2007 (hereafter "Outstanding Office Action"). All claims were rejected.

By virtue of this paper, claims 1, 8, 13 and 17 are sought to be amended and claims 18-20 are sought to be canceled. The amendments and cancellations are believed not to introduce new matter and their entry is respectfully requested. The amendments and cancellations are made without prejudice or disclaimer. Reconsideration is requested further in view of the below remarks.

Claim Objections

Claims 1 and 17 were objected to due to improper status recited with the respective claim in the previous response. The objection is rendered moot in view of the current status ("Currently Amended") now recited with each of the amended claims 1 and 17.

The Examiner is thanked for the detailed examination as well as for continuing examination despite the noted errors.

Claim Rejections - 35 U.S.C. § 103

Claims 1-6, 8-11, 13-21 were rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Number 5,809,490 issued to Guiver (hereafter "Guiver").

Without acquiescing to the Examiner's contentions, it is asserted that the presented claims are allowable over the art of record.

For example, the present invention models two separate systems, with corresponding separate data sets (characterizing the respective systems). One of the two systems is first modeled based on the corresponding data set to generate a first set of weights of a neural network. If the two data sets are determined to be similar, then the first set of weights are used as weights for the neural network when modeling the other/second system.

Guiver does not teach or reasonably suggest such a combination of features.

In this regard, the Examiner asserts, among other points:

> ...; receiving a second data set characterizing the behavior of a second system sought to be modeled by said neural network, said second data set containing a second plurality of data elements (***The examiner takes the position that the "second data", and that the "second system" is analogous to the data input into the neural network and the system to be modeled after the initial training of the neural network using the training set (i.e. first data) and the training model (i.e. first system).***)
> (Page 5, lines 9-14 of the Outstanding Office Action, ***Emphasis Added***)

It is unclear as to which specific phases of operation of Guiver are being equated to the claimed modeling of the first system and the second system. The Examiner is respectfully requested to provide further detail so that Applicants can appropriately respond to the rejection.

However, in the interest of furthering prosecution, Applicants now point out that the above emphasized assertion is inconsistent with the various possible analogies with Guiver.

For example, Applicants first note that the disclosure of Guiver can be broadly divided into two areas:

(A) to construct a data driven analyzer or model; and

(B) use the constructed model, which picks data including short impulses/spikes due to the improvement in (A).

The above noted two areas cannot be equated to the claimed modeling of the first and second systems since the operation corresponding to (B) **does not generate** any claimed second set of weights.

Based on the Examiner's use of the word 'training' in the above-emphasized text, it is believed the Examiner maps the operation within (A) to the claimed modeling of the first system and the second system.

In particular, it is believed that the Examiner analyzes the operation of (A) as being further divided into

A1. training a SOM clusterizer to identify a working data set for model development;

A2. Building a model based on the working data set

In this scenario, there are no two different data sets, contrary to the express recitation in claim 1.

Claim 1 is thus allowable over Guiver.

Claim 1 is allowable over Guiver for the addition reason in reciting that, "... determining whether said first plurality of data elements follow a similar pattern as said second plurality of data elements; ..."

The Examiner relies on lines 64-66 of Column 9 of Guiver to teach such a feature. For the convenience of the Examiner, Applicants reproduce the relied text along with the surrounding portion.

> ***During training,*** the Kohonen neuron with the smallest distance adjusts its weight to be closer to the values of the input data. The neighbors of the winning neuron also adjust their weights to be closer to the same input data vector. The adjustment of neighboring neurons is instrumental in preserving the order of the input space in the SOM. Statistical methods are used so that the range of inputs converges to a single output. Because the correct output is unknown, the Kohonen SOM assumes that if all the data converges to a particular point, that point must be significant. In each pass through the network, the node with a minimum distance between the input and its weight vector is considered the winner. Every node in the neighborhood is updated so that their weight vectors move toward the winner's vectors. After a series of passes through the network, all inputs tend to converge to a single output.
> (Col. 9, lines 64 to Col. 10 line 12 of Guiver, ***Emphasis Added***)

Thus, the Kohonen neuron relied upon by the Examiner, is used in **training phase**.

The Examiner's attention is directed to Fig. 6 of Guiver, which shows the routine to train the Kohonen SOM (neuron). In particular, step 182 of Fig. 6 indicates that only a single

input data is received, and further iterations are repeated based on the change in weights and the number of iterations already performed.

There is no comparison step there between data elements of different sets (used for modeling respective systems, as claimed)!

Currently amended independent claim 1 is accordingly allowable over Guiver for this additional reason as well.

Claims 2-7 and 21 depend from currently amended independent claim 1 and are allowable at least for the reasons noted above with respect to claim 1.

Claim 3 is independently allowable in reciting that, " ... wherein random values are used as said plurality of initial weights for said plurality of neurons ***while modeling said second system*** if said first plurality of data elements do not follow a similar pattern as said second plurality of data elements." (***Emphasis Added***)

The Examiner maps the above emphasized if condition to the same portion of Guiver reproduced above. As may be readily observed, the relied upon portions relate to adjustment of weights during training, and is not related to modeling a second/separate system.

Accordingly, claim 3 is independently allowable over Guiver.

Claim 4 is also independently allowable over Guiver in reciting that:

> fitting said first data set into a first curve, wherein said first curve is represented in the form of ***a first polynomial function having a first set of coefficients***;
>
> fitting said second data set into a second curve, wherein said second curve is represented in the form of ***a second polynomial function having a second set of coefficients***;
>
> ***computing a distance between said first set of coefficients and said second set of coefficients***; and
>
> checking whether said distance is less than a threshold, wherein said first plurality of data elements are determined to follow a similar pattern as said second plurality of data elements if said distance is less than said threshold.

(Previously presented claim 4, ***Emphasis Added***)

The Examiner relies on the Equation in line 10, Col. 8 of Guiver in rejecting claim 4. However, the distance computed there is believed to be between the **input data** and the current weight values of a neuron, based on the below:

> During training, the Kohonen neuron with the smallest distance ***adjusts its weight to be closer to the values of the input data.*** The neighbors of the winning neuron also adjust their ...
> (Col. 9, lines 64-66 of Guiver, ***Emphasis Added***)

Thus, Guiver does not disclose computing the distance between coefficient sets of different polynomials modeling respective separate data sets. Claim 4 is accordingly independently allowable over Guiver.

Currently amended independent claims 8, 13 and 17 are also allowable at least for the reasons noted above with respect to claim 1 in reciting "...wherein said second system is another system separate from said first system and wherein said first data set is separate from said second data set."

Claims 9-12 and 14-16 respectively depend from currently amended independent claims 8 and 13 and are allowable at least for the reasons noted above with respect to the respective claims 8 and 13.

Response to Arguments

In page 29, the Examiner had further asserted that:

> The examiner has considered the applicant's above arguments and has found that while Guiver does not explicitly recite the applicant's claimed, disclosed, and argued "modeling [of] a first system [and] modeling a second system using [the final weights obtained from the modeling of said first system, in] a neural network". However, the examiner takes the position ***that it was widely known in the art at the time of the applicant's invention*** that when training and using a neural network, that the neural network produces a first set of weights when modeled on training data and that upon completion of said training, the final weights produced at the completion of the neural network training phase, are used as initial weights when modeling subsequent data. Based on these arguments, the examiner asserts that the applicant's claimed invention would have been obvious to one skilled in the art in light of the teachings of Guiver. ...
> (Page 29 lines 3-13 of the Outstanding Office Action, ***Emphasis Added***)

At least to the extent the Examiner maintains the above emphasized positions even with respect to the presented claims, the Applicants respectfully request the Examiner to point within the art of record the basis for the assertion. In case the assertion is based on the personal knowledge of the Examiner, the Examiner is respectfully requested to provide a personal affidavit (see 37 CFR § 1.104 (d) (2)) setting forth the specific basis of the assertion.

The Examiner had further asserted:

> The examiner has considered the applicant's above arguments and has found that the use of the final weights after they obtained is inherent in the invention of Guiver. This position is based on the applicant arguing that the "[Applicant's] claimed final weights are analogous to the weights when the routine of Guiver exits as taught [in Column 9, Lines 54-63]" (Page 11 of 14; Lines 20-22). The examiner has found further support that after producing the final weights, Guiver uses the final weights, in his teaching in Column 7, Lines 46-48, that "**prior to using the Kohonen SOM clusterizer, the SOM [is] trained**" (Emphasis Added) and that the final weights produced in Column 9, Lines 54-63, are part of said training process. Therefore, based on the applicant's arguments and the teaching of Guiver, the examiner has found the applicant's statement that the final weights produced in Guiver are used to model input data to be non-persuasive.

(Page 29 lines 3-13 of the Outstanding Office Action, ***Emphasis Added***)

As explained above with respect to claim 1, there is only a single input data used both for training the SOM clusterizer and for building the model as well. In sharp contrast, the claimed invention models two separate system (characterized by corresponding separate data sets) to generate corresponding weights for the neural network.

Conclusion

Thus, all the objections and rejections are believed to be overcome and the application is believed to be in condition for allowance. The Examiner is invited to telephone the undersigned representative at 707.356.4172 if it is believed that an interview might be useful for any reason.

Respectfully submitted,
/Narendra R Thappeta/
Signature

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Printed Name: Narendra Reddy Thappeta
Attorney for Applicant
Registration Number: 41,416